Aerated Landfills, Changing the "Dry Tomb" Paradigm

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Leachate from landfills at many sites has contaminated groundwater with heavy metals, petroleum hydrocarbons and chlorinated solvents. The current US regulations require that landfills be created as dry tombs, with liners and caps. This only increases the long-term liability and life-cycle costs of operating a landfill. Simple regenerative blowers and leachate recirculation pumps can transform a landfill into an aerobic bioreactor. In situ aerobic bioremediation of landfills degrades contaminants and organic components in the refuse mass faster, decreases green house and toxic gas emissions, decreases or eliminates the need for leachate treatment, increases subsidence, decreases odors, and decreases the need for covers and liners. Since direct air injection into the subsurface will also increase metal precipitation and decrease metal solubility by increasing the pH and redox potential it also may indirectly control metal mobility form a landfill. The over all effect of landfill aeration is to stabilize the landfill sooner at a fraction of the cost of a conventional dry tomb. Full-scale field demonstrations using air injection and leachate recirculation at several landfills in South Carolina and Georgia are presented for support.

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